Master of Technology in Intelligent Systems

Shortcut

Overview

Next Intake	Aug 2023 (Full-Time), Jan 2024 (Part-Time)
Duration	• Full-time 1 year (2 semesters) • Part-time 2 years (4 semesters)
Application Timeline	Admissions into the MTech programme is competitive. Eligible students will be offered admissions on a first-come first-served basis, The average application processing period would take between 6 - 8 weeks. Applications for August 2023 admission into the full-time MTech IS should be submitted before 30 April 2023. Applications for January 2024 admissions into the part-time MTech IS should be submitted before 15 October 2023. **Applicants based in Singapore are to take the test in NUS-ISS. Applicants based overseas can take the test online. If you apply after the above dates and are accepted into the programme, you will be offered advanced admission into the following academic year (August 2024/January 2025). The dates above are subjected to changes.*
Entrance Test	Online: 16 March, 22 March, 31 March, 12 April and 20 April 2023 Face-to-Face: 22 March, 12 April and 20 April 2023* **Applicants based in Singapore are to take the test in NUS-ISS. Applicants based overseas can take the test online.* *The dates above are subjected to changes.*
Download Brochure	English
Info-session	Click here for dates
e-Consultation	Register at https://bit.ly/2ZNEqaN
Enquiry	iss-admissions@nus.edu.sg

The NUS Master of Technology in Intelligent Systems (MTech IS) programme is targeted at working professionals who wish to be able to design and build systems that utilise Artificial Intelligence and other Smart Systems techniques. Application areas are wide and diverse, and include robotics, autonomous vehicles, intelligent sensing systems, Internet of Things, Smart City applications and Industry 4.0 applications, as well as applications within business and commerce.

The MTech IS programme emphasises the concepts, techniques and methods of Artificial Intelligence, and their application to the development of Intelligent Systems applications. The programme provides you with the essential knowledge and practical experience needed to become an Artificial Intelligence and Intelligent Systems specialist, and prepares you to be able to lead the development of Intelligent Systems in providing effective and optimal business solutions for your organisation.

Learning outcomes:

- Apply Intelligent Systems concepts, techniques and methods to solve varied problems across multiple domains including: business, manufacturing, engineering, healthcare etc.
- Lead the development of Intelligent Systems using contemporary tools and techniques, including Artificial Intelligence, Machine Learning, Prediction, Forecasting, Classification, Clustering and Optimisation
- Design and customise algorithms to solve complex business problems and create strategic advantage

Recognition:

- Top student is awarded the SPH Medal and Prize
- Best Project Prize

Scholarships:

- **IMDA Post Graduate Scholarship:** The SG:D Scholarship (Postgraduate) is an industry scholarship that empowers students pursuing postgraduate studies in specialised ICM areas such as Artificial Intelligence, Cybersecurity, Analytics, Immersive Media, and Digital Content Creation. Scholarship details and eligibility criteria can be found here.
- **OCBC AI Scholarship** The Master of Technology in Intelligent Systems (MTech IS) programme is also eligible for the OCBC AI Scholarship. This scholarship provides full sponsorship of tuition, living, book, conference and miscellaneous fees allowance to students of any nationality enrolled in full-time postgraduate degrees in AI within selected tertiary institutions in Singapore. More details here.

Modules

MTech IS candidates must successfully complete the following course components to be awarded the degree:

- **Fundamental Modules** - Complete 2 Graduate Certificates
- **Specialist Modules** - Complete 2 Graduate Certificates selected from 4

Fundamental Modules

Intelligent Reasoning Systems

Students will be taught how to build Intelligent Systems that solve problems by computational reasoning using captured domain knowledge and data. Example applications include, question answering systems such as IBM's Watson, personal assistants such as Amazon's Alexa Skills and game-playing systems such as Google's AlphaGo **Courses:**

- Machine Reasoning
- Cognitive Systems
- Reasoning Systems

Pattern Recognition Systems

Students will be taught how to design and build systems that make decisions by recognising complex patterns in data. Examples are robotic systems and smart city applications that take as input diverse sensor data streams. These systems will utilise the latest pattern recognition, machine learning and sensor signal processing techniques. **Courses:**

- Problem Solving using Pattern Recognition
- Intelligent Sensing and Sense Making
- Pattern Recognition and Machine Learning Systems

Specialist Modules

Intelligent Robotic Systems

Students will be taught the skills required to build Intelligent Systems that will help control the advanced robotic systems, autonomous vehicles and industrial automation that will be central to Industry 4.0. **Courses:**

- Robotic Systems
- Developing Autonomous Robots & Vehicles
- Human-Robot System Engineering

Intelligent Sensing Systems

Students will be taught the skills and techniques required to build Intelligent Sensing Systems that are able to make decisions based on visual and audio sensory signals, including human speech. Example systems include crowd monitoring, facial recognition, medical sensing, robot and vehicle control. **Courses:**

- Vision Systems
- Spatial Reasoning from Sensor Data
- Real Time Audio-Visual Sensing and Sense Making

Intelligent Software Agents

Students will be taught how to build intelligent software agents that can act on behalf of, and replicate the actions of, humans in commercial and business transactions as well as automate business processes. Example systems include intelligent personal assistants, intelligent shopping agents as well as intelligent agents performing robotic process automation. **Courses:**

- Intelligent Process Automation
- RPA and IPA - Strategy and Management
- Software Robots - Best Practices
- Self-Learning Systems

Practical Language Processing

Students will be taught advanced skills in practical language processing. This includes fundamental text processing, text analytics, deep learning techniques and their application in sentiment mining and chatbots development. **Courses:**

- Text Analytics
- New Media and Sentiment Mining
- Text Processing using Machine Learning
- Service Chatbots

Learning Journey

Intelligent Reasoning Systems	Pattern Recognition Systems	Intelligent Sensing Systems	Intelligent Softw Agents
Machine Reasoning	Problem Solving using Pattern Recognition	Vision Systems	RPA and IPA - Strategy and Management
Reasoning Systems	Intelligent Sensing and Sense Making	Spatial Reasoning from Sensor Data	Software Robots - Best Practices
Cognitive Systems	Pattern Recognition and Machine Learning Systems	Real Time Audio-Visual Sensing and Sense Making	Intelligent Process Automation
			Self-learning Systems
Graduate Certificate in Intelligent Reasoning Systems	**Graduate Certificate in Pattern Recognition Systems**	**Graduate Certificate in Intelligent Sensing Systems**	**Graduate Certificate in Intelligent Software Agents**

Capstone Project & Internships

A central element of the MTech programme is the project module.

Student projects for MTech IS students extend over a period of three months for full-time students and one year for part-time students. Full-time students are allowed to conduct their project as a team-based internship if desired. The expected commitment for the project is 60 man-days per team member.

Objectives

- Acquire hands-on experience in defining and analysing the knowledge and data requirements of real-world business problems
- Plan and strategise high-value intelligent systems projects to provide identifiable benefits to the internship company
- Design, develop and implement Intelligent Systems through the effective use of Artificial Intelligence and Knowledge Engineering tools and techniques

Learning outcomes:

- Conduct requirements analysis using a structured approach
- Produce high-quality intelligent systems following industry best practices and methodologies
- Proficient in the use of knowledge and data engineering tools and techniques to deliver optimal business value

Read more on Internships & Placement

Timetable & Exams

Timetable & Exams for Full-time Students

Year	Curriculum	Assessment
Year 1 Semester 1 (Jul - Nov)	**ISY5001: Intelligent Reasoning Systems (compulsory)** • Machine Reasoning • Reasoning Systems • Cognitive Systems **ISY5002: Pattern Recognition Systems (compulsory)** • Problem Solving using Pattern Recognition • Intelligent Sensing and Sense Making • Pattern Recognition and Machine Learning Systems	• Continuous assessments • Open book written exams

<table>
<tr><td rowspan="4">Year 1 Semester 2

(Jan - Mar)</td><td colspan="2">Choose ONE</td><td>• Continuous assessments
• Open book written exams</td></tr>
<tr><td>ISY5004: Intelligent Sensing Systems

• Vision Systems
• Spatial Reasoning from Sensor Data
• Real Time Audio-Visual Sensing and Sense Making</td><td>ISY5005: Intelligent Software Agents

• RPA and IPA – Strategy and Management
• Software Robots – Best Practices
• Intelligent Process Automation
• Self-Learning Systems</td><td></td></tr>
<tr><td colspan="2">Choose ONE</td><td>• Continuous assessments
• Open book written exams</td></tr>
<tr><td>ISY5003: Intelligent Robotic Systems

• Robotic Systems
• Autonomous Robots and Vehicles
• Human-Robot System Engineering</td><td>EBA5004: Practical Language Processing

• New Media and Sentiment Mining
• Text Processing Using Machine Learning
Conversational UIs</td><td></td></tr>
<tr><td>Year 1 Semester 2 (Mar - Jul/Aug)</td><td colspan="2">Team-based Internship or Off-site Project

Hands-on project with external organisation</td><td>• Project, presentation & report</td></tr>
</table>

Timetable & Exams for Part-time Students

Year	Curriculum	Assessment
Year 1 Semester 1 (Jan - May)	**ISY5001: Intelligent Reasoning Systems (compulsory)** • Machine Reasoning • Reasoning Systems • Cognitive Systems	• Continuous assessments • Open book written exams

<table>
<tr><td>Year 1

Semester 2

(Jul-Nov)</td><td colspan="2">ISY5002: Pattern Recognition Systems (compulsory)

• Problem Solving using Pattern Recognition
• Intelligent Sensing and Sense Making
• Pattern Recognition and Machine Learning Systems</td><td>• Continuous assessments
• Open book written exams</td></tr>
<tr><td rowspan="2">Year 2 Semester 1 (Jan - May)</td><td colspan="2">Choose ONE</td><td rowspan="2">• Continuous assessments
• Open book written exams</td></tr>
<tr><td>ISY5004: Intelligent Sensing Systems

• Vision Systems
• Spatial Reasoning from Sensor Data
• Real Time Audio-Visual Sensing and Sense Making</td><td>ISY5005: Intelligent Software Agents

• RPA and IPA – Strategy and Management
• Software Robots – Best Practices
• Intelligent Process Automation
• Self-Learning Systems</td></tr>
<tr><td rowspan="2">Year 2 Semester 2 (Jul - Nov)</td><td colspan="2">Choose ONE</td><td rowspan="2">• Continuous assessments
• Open book written exams</td></tr>
<tr><td>ISY5003: Intelligent Robotic Systems

• Robotic Systems
• Autonomous Robots and Vehicles
• Human-Robot System Engineering</td><td>EBA5004: Practical Language Processing

• New Media and Sentiment Mining
• Text Processing Using Machine Learning Conversational UIs</td></tr>
<tr><td>Year 2 Semester 1-2 (Mar - Sep)</td><td colspan="2">Team-based Internship or Off-site Project

Hands-on project with external organisation</td><td>• Project, presentation & report</td></tr>
</table>

Students are evaluated through a combination of course work, project work and examinations. All students are required to complete a three-hour examination for each fundamental and specialist module taken.

Students who fail a module will be asked to withdraw. A minimum average grade across all examinations and practice assessments must be achieved to be awarded the degree.

Fees

From 1 January 2023 onwards

Fee Component	International Students	Singapore Citizens	Singapore Permanent Residents
Full Tuition Fees	S$51,700.00 to S$52,600.00	S$51,700.00 to S$52,600.00	S$51,700.00 to S$52,600.00
NUS-ISS Subsidy	-	S$9,180.00 to S$9,360.00	S$9,180.00 to S$9,360.00
Nett Tuition Fees	S$51,700.00 to S$52,600.00	S$42,520.00 to S$43,240.00	S$42,520.00 to S$43,240.00
8% GST on Nett Tuition Fees	S$4,136.00 to S$4,208.00	S$3,401.60 to S$3,459.20	S$3,401.60 to S$3,459.20
Total Nett Tuition Fees, including GST	S$55,836.00 to S$56,808.00	S$45,921.60 to S$46,699.20	S$45,921.60 to S$46,699.20
NUS-ISS Study Award for AY2022/AY2023 (See T&Cs on Study Award below)	-	Up to S$20,000.00	Up to S$10,000.00
Total Nett Tuition Fees payable after Study Award, including GST	S$55,836.00 to S$56,808.00	S$25,921.60 to S$26,699.20	S$35,921.60 to S$36,699.20

Note:

1. The current NUS-ISS Subsidy is a subsidy of 20% of the component course fees. The NUS-ISS Subsidy is subjected to change without prior notice. There is no subsidy for the Practice Module fees or the Capstone fees.
2. The exact tuition fees will be calculated based on the student's selection of the Graduate Certificates.
3. The miscellaneous fees payable are set out here.
4. From 1 January 2023, GST will be increased to 8%.
5. From 1 January 2024, GST will be increased to 9%.

Terms & Conditions of the NUS-ISS MTech Study Award (as of 15 March 2023):

1. The NUS-ISS MTech Study Award will be given to qualifying Singaporeans and Singapore Permanent Residents matriculated in AY2023/2024 and AY2024/2025 into the unfunded MTech EBAC, MTech IS and MTech SE degrees as through-train students.
2. The NUS-ISS MTech Study Award may be amended at any time at the discretion of NUS-ISS.
3. The quantum of the Study Award will be (up to) S$20,000 for Singaporeans, subject to the T&Cs described here.
4. The quantum of the Study Award will be (up to) S$10,000 for Singapore Permanent Residents, subject to the T&Cs described here.
5. The Study Awards will be divided evenly and given out progressively over the semesters of study, i.e., for part-time students, the award will be given out over four semesters, and for full-time students, the award will be given out over two semesters. The semesters must run consecutively unless approved by NUS-ISS.
6. Within each semester, the Study Award may not exceed the fees paid by the respective student in that semester.

7. Students who are entitled to course module waivers will still receive the waiver, and need not pay course fees for those course modules.
8. The Study Award will be on top of and applied after any other subsidies in course module fees.
9. Where students have been waived fees at the start of the programme, the Study Award will be pro-rated as a simple proportion of the remaining fees.
    1. For the pro-ration calculation, we will use the maximum fees payable for the respective programme, before GST and misc fees.
    2. For example,
        1. the maximum fees for an IS student is $53,390
        2. Say that student has taken two 3-day component courses which are allowed as waivers, totalling $5,400 in waived fees
        3. The remainder of the fees is now $53,390 - $5400 = $47,990
        4. The Study Award will be prorated as $20,000 x (47,990/53,390) = $17,977.15
10. Students need not choose to apply, or to accept the Study Award. The Study Award will be given automatically to all entitled students when they are matriculated into the respective MTech programme.
11. Students may choose to decline the Study Award, in which case, they should inform NUS-ISS when they accept entry into the programme.
12. Students who are already in receipt of full scholarships or sponsorship support are not eligible for the Study Awards. Those who are in receipt of partial scholarship/sponsorship shall have proportionally reduced study awards.
13. Students who withdraw from the programme or are terminated from the programme before graduation will not be eligible for the Study Award in future.
14. The Study Award may be terminated at any time if, in the opinion of NUS-ISS, the scholarship holder's progress or behaviour is deemed unsatisfactory.

Admission & Application

Applicants must possess the following pre-requisites:

- Bachelor's degree preferably in Science or Engineering and a grade point average of at least B
- Proficiency in the English Language (written and spoken)*****
- Have passed an entrance test
    - NUS-ISS may, at its discretion, accept **GRE general test** in lieu of NUS-ISS entrance test in genuine cases e.g. a candidate lives in a country where NUS-ISS does not administer entrance tests or candidate had valid reasons that prevented him/her from attending the NUS-ISS entrance test when it was administered
    - A sample of the entrance test can be found **here**
- Preferably two years relevant working experience
    - As an IT professional, such as software developer, business analyst, or as a domain expert, working in an area where Intelligent Systems and Knowledge Engineering can be applied
    - Candidates with highly relevant IT degrees, with consistently good academic records and good practical software development knowledge gained either through course work, course projects or professional IT certifications, may be granted a work experience waiver
- Have received a favourable assessment at admissions interview conducted by NUS-ISS

****English Language Proficiency***

- *Applicants who graduated from universities where English is not the medium of instruction should submit TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing System) score as*

evidence of their proficiency in the English language.

TOEFL	*Paper-based test (580) Computer-based test (237) Internet-based test (85)*
IELTS	*Result of 6.0*

- *Institution code of NUS-ISS for TOEFL is 2432*
- *TOEFL and IELTS are only valid for five years after the test and the validity should not expire before the beginning of the application period for the coursework programme*.
- *NUS-ISS accepts TOEFL iBT Special Home Edition test scores.*

How to Apply

All applicants are required to submit an online application for our graduate coursework programme (through-train).

Step 1: You can refer to our detailed **step-by-step guide** on how to complete the online application.

Step 2: It will take you about 30 minutes or more to complete your application. You will need the softcopies of the supporting documents for your online application. Click **here** for the supporting documents to be uploaded and additional information required.

Step 3: You can proceed to **apply online**. Remember to **upload all the required supporting documents** under the "**Documents Upload**" section **before** you do the online submission. You can refer to our **FAQ**.

Step 4: Please ensure you **submit** your online application(s) and make **online payment** for the application fee (non-refundable) of **S$50.00** per application (*inclusive of prevailing GST*).

Important:

1. *Applications that are **incomplete**, including missing supporting document(s), **will not be processed**.*
2. *Applicants who are found to have given inaccurate or false information will be required to withdraw from the programme*.
3. *All payments for application fee are **non-refundable.***
4. *Please note that the University has not engaged any external agencies to undertake student recruitment on its behalf. Candidates interested in our graduate programmes are advised to apply directly to the University and not through any agents. Candidates who apply through agents will not have any added advantage in gaining admission and the University reserves the right to reject such applications without giving reasons*.

Career Pathways

Find your fit with new opened doors

There is opportunity in Singapore for most areas of IT. What you learn in terms of IT skills is not as important as what you do with it. It is the attitude and the ability to learn from mistakes, and to contribute back to the company that you work for that is likely to make more of a difference than specific IT skills.

There are two main paths for advancement in IT - either technical or management. Technical means you continue to deepen your technical area in a domain (such as system architecture, or software engineering, etc.) and you become an expert in those areas. The other is management, where you can focus on project management, outsourcing, etc.

Our internship companies often tell us that if we can give them good students as interns, it is very likely they will get a job offer at the end of the internship.

As an MTech IS graduate, you will be trained to become an Artificial Intelligence and Knowledge Engineering and data analytics specialist, leading the development of Intelligent Systems to provide smart business solutions for organisations.

Career Prospects

- Artificial Intelligence Specialist
- Machine Learning Specialist
- Intelligent Systems Specialist
- Robotic Systems Developers
- Autonomous Vehicle Systems Developers
- Vision and Sensing Systems Developers
- A.I. Business System Developers
- Intelligent Process Automation Developers
- Intelligent Healthcare System Developers
- Smart City Applications Developers
- Language System Engineers
- Text Mining / Analytics Specialist
- Big Data Developers
- Games Developers

MTech alumni are pursuing their careers at these global organisations:

- Accenture
- Creative Technology
- DBS Bank
- Defence Science & Technology Agency
- Deutsche Bank AG
- Fuji Xerox Asia Pacific
- HP Singapore
- IBM Singapore
- Infocomm Development Authority of Singapore
- Inland Revenue Authority of Singapore
- Jurong Port
- Microsoft
- Murex
- NCS
- NEC Asia Pacific
- OCBC Bank
- Revolution Analytics
- Singapore Telecommunications
- Standard Chartered Bank
- Starhub
- ST Electronics
- Tata Consultancy Services

The NUS-ISS Career Services Office helps students to match jobs based on their skills and experience. There will be bi-yearly Career Fairs held for students and graduates to network with employers. However, successful employment will depend on the employers.

The average starting salary of an IT professional depends on the degree and your previous working experience. For fresh graduates with no work experience, the starting salary ranges from S$3,600 to S$3,800. Graduates with more than 3 years of work experience can expect a starting pay of S$4,000 and above.

The most important skill is to get the job done and be persistent. You need to be broad-based and the technology does not matter.

You can get some salary benchmarks from these sites:

- Salary.sg
- Hays.com Salary Guide
- Kelly Services Salary Guide

Dheepan Manoharan, India

Data AnalystInfineon

Master of Technology in Knowledge Engineering (MTech
2016

"

The curriculum was up to date with industry practices and requ
equal amount of importance was given to both theory and prac
The continuous assessments were challenging, and served as

David Low Jia Wei, Malaysia

Chief Data Scientist and Co-founderpand.ai

Master of Technology in Knowledge Engineering (MTech
2016

"*The Master of Technology in Knowledge Engineering progran*
was exactly what I was looking for - industry-oriented curriculu
lecturers and hands-on projects that allow us to put our knowle
The classes are taught in an interactive manner, allowing me t

Alvin Khoo, Singapore

Regional IT DirectorRoyal DSM

Master of Technology in Knowledge Engineering (MTech
1997

"*One of the most useful things we learnt at ISS was to be anal*
to adapt, especially in an industry that is changing so quickly. I
was an invaluable reference point."

Dheepan Manoharan, India

Data AnalystInfineon

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Discover Life with Us

Our Students

Building up a portfolio for work and life.

Find Out More

Internship & Placements

Get a headstart with actual work experience under your belt.

Find Out More

Career Services

Receive job placement opportunities with partner organisations.

Find Out More

Teaching Staff

Learn from our teaching staff with more than 20 years of industry experience.

Find Out More

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More than one Google Analytics scripts are registered. Please verify your pages and templates.